Suzaku News You Can Use

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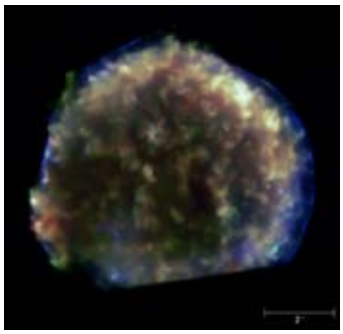
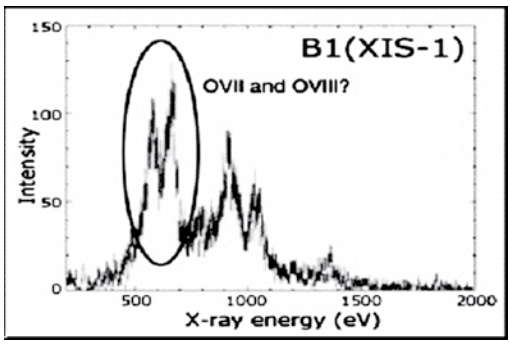
Latest Mission News
— Targets for May and June



Textbook coverage of the scientific process rarely includes examples of collaborative efforts of scientists around the world. Hopefully we are helping you by giving you a description of the process, almost as it is happening. Since May, Suzaku has been obtaining data from targets previously proposed by scientists. So what was on tap for May and June?

One of the most prominent targets in May was the Cygnus Loop, a remnant of a 15-20,000 year old supernova (more on it below in the Objects article). At the end of June, a pair of observations of the Tycho supernova (Chandra X-ray image on right) is scheduled (more on Tycho at http://chandra.harvard.edu/photo/2002/0005/index.html). For the entire list of targets, see http://heasarc.gsfc.nasa.gov/docs/suzaku/tlminfo/ao1a_lttl.html. In upcoming issues, you should begin to see some of the results from these observations! Also, don't forget to check out the Astro-ph (http://arXiv.org/archive/astro-ph/) website for scientific submissions related to Suzaku!



Resources For All
— A Tasty Meal for Professional Eyes ONLY!

As the academic year comes to an end, "capstone activities" provide motivation and challenge for students, as well as the chance to bring together major concepts from a course. With respect to Suzaku, we have cooked up a recipe for the physics student that includes the Law of Conservation of Energy, some Thermodynamics, and a pinch of optics thrown in to spice it up. The "heat" for the activity is the opportunity for students to analyze authentic data. We call it: "How Does the Conservation of Energy Apply to Detecting X-Rays?" It takes students through some typical problem solving exercises that will put your students through their paces, and then introduces how spectral X-ray data provide information on elements in far away astronomical objects like supernovae remnants. Extensions are even

provided for a tasty "dessert"! So for a hearty meal for your students, including information about the graph shown here, visit:

- http://suzaku-epo.gsfc.nasa.gov/docs/suzaku-epo/education/lessons/thermo/activity3.html

Bon Appetit!

EDUCATORS — WE NEED YOU!!!: We are hoping that you might be the type of educator who enjoys reviewing classroom activities, or even perhaps using them in your classroom. If you are, we would be interested in having you review and/or classroom-test the activities that have been developed around Suzaku in their classroom. Please respond to suznuzquiz@athena.gsfc.nasa.gov and we will respond in short order.

About The Crew

— Featuring Scientist Jean Cottam

—This will be a recurring feature allowing you to learn a bit about some of the people on the Suzaku team.

What is/was your role for Suzaku?

JC: I was responsible for the calibration of the XRS microcalorimeter, both on the ground and in flight. Unfortunately, the XRS lost all of its cryogens about a month after launch, and it is no longer functional. Now I work exclusively on the astrophysics side of Suzaku, helping to coordinate the science program for the Science Working Group and analyzing my own data.

What were you like as a student in high school?

JC: I was a seriously diligent student, but I was in a school where that was encouraged, so I didn't feel like a geek. I was also involved in everything from science to history to Greek to ballet.

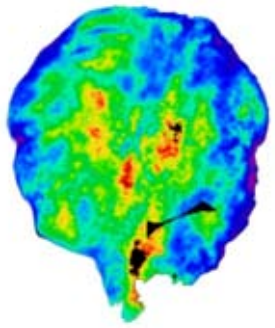
From high school to the present, were there any interesting twists and turns or ironies concerning what you planned to do and where you are now?

JC: I majored in physics at Harvard, but by the time I graduated I hated it and swore I'd never go back. I spent a couple of years teaching junior high and high school physics and math. I discovered that to be the kind of teacher I wanted to be, I needed to go back to school. I think I barely made it into graduate school. The second time around was completely different, and I loved it. Research has been so interesting that I haven't gone back to teaching high school, although I still hope to eventually.

- More about Jean at: http://imagine.gsfc.nasa.gov/docs/features/bios/cottam/cottam.html.

Objects of Interest

— Cygnus Loop



Because of the size of this target, Suzaku spent much of May looking at the Cygnus Loop, in the constellation Cygnus. The Loop is the large remnant of a supernova that most likely occurred between 15,000 and 25,000 years ago (it is notoriously difficult to date supernovae because of their complexity).

The remnant is relatively close, at a distance of "only" 1400 light years. It is one of very few supernova remnants that are anywhere close to us. If you were to view it in the sky, it would span an area 6 times the diameter of the Moon! You can't see it because the light from it is too dim for our eyes.

The Loop has been a popular subject of multiwavelength studies by the ROSAT and Hubble Space Telescope missions, among others. The colors in the ROSAT imagery on the right indicate the ratio of higher energy X-rays (known as "hard" X-rays) to lower energy X-rays ("soft" X-rays). The red area indicates a greater ratio and therefore a hotter region — on the order of millions of kelvins. Greens, blues, and purples indicate "cooler" areas. More X-rays images of the Loop are at http://heasarc.gsfc.nasa.gov/docs/rosat/gallery/snr_cygloop.html and there's more on ROSAT at: http://heasarc.nasa.gov/docs/rosat/rosgof.html.

A Brief History Of X-Rays:

— X-rays Find an Important Application?

It is always great to have a battery of stories to entertain and motivate students and to create teachable moments skillfully. This short article aims at giving you a little gem to spring out in class at almost any time.

In the 1940s and early 1950s, shoe stores and shoe departments in larger stores found that people loved to look at X-rays of their feet. This especially attracted young children, and although this technique was supposed to help fit shoes properly, it was mostly a marketing ploy. It is estimated that the number of small X-ray devices (like the one on the right) used for this purpose was in the tens of thousands! But — you guessed it — this practice was highly dangerous. The machines were poorly constructed and leaked copious amounts of dangerous radiation. This practice was outlawed, starting in the late 1950s. Unless you are at least 50 years old, you probably have never seen this short-lived, X-ray marketing ploy.

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Trivia Question:

A simple question this week — Which state first banned the use of the shoe fitting X-ray in the late 1950s? The first person to answer correctly… will win educational materials from the Imagine the Universe! team.

Congratulations to the winner of the previous trivia quiz!: A Bayes